

# MATERIAL SAFETY DATA SHEET



Date of Issue: September 3, 2004

## 1. IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND SUPPLIER

**Product name** Nitofol<sup>®</sup> Insecticide Spray

**Other names** None

**Product codes and pack sizes** 4953710 (1 L), 4953737 (10 L)

**Chemical group** Organophosphorus

**Recommended use** Agricultural insecticide

**Formulation** Soluble concentrate (SL)

**Supplier** Bayer CropScience Pty Ltd ABN 87 000 226 022

**Address** 391 - 393 Tooronga Road, East Hawthorn  
Victoria 3123, Australia

**Telephone** (03) 9248 6888

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**Website** [www.bayercropscience.com.au](http://www.bayercropscience.com.au)

**Contact** Development Manager (03) 9248 6888

**Emergency Telephone Number** 1800 033 111 – Orica SH&E Shared Services

## 2. HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

**HAZARDOUS SUBSTANCE (see Risk phrases below) - DANGEROUS GOOD**  
**Very poisonous. Cholinesterase inhibitor. Dangerous to the aquatic environment.**

**Hazard classification** Hazardous (National Occupational Health and Safety Commission - NOHSC)

**Risk phrases** R28 – Very toxic if swallowed.  
R24 – Toxic in contact with skin.  
R36 – Irritating to eyes.

**Safety phrases** See Sections 4, 5, 6, 7, 8, 9, 13

**ADG classification** “Dangerous good” for transport by road or rail according to the Australian Code for the Transport of Dangerous Goods by Road and Rail – ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC (contains methamidophos), Class 6.1, Packing Group II, UN 3018, Marine Pollutant.

**SUSDP classification** Schedule 7 (Standard for the Uniform Scheduling of Drugs and Poisons)

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	CAS Number	Concentration (g/L)
Methamidophos	[10265-92-6]	580
Other ingredients, non hazardous	----	≈ 650

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## 4. FIRST AID MEASURES

**If poisoning occurs, immediately contact a doctor or Poisons Information Centre (telephone 13 11 26), and follow the advice given. Show this Material Safety Data Sheet to the doctor.**

- Inhalation** If inhaled, remove to fresh air and keep at rest. Obtain **urgent** medical advice. If breathing stops or shows signs of failing, start artificial respiration. Give one atropine tablet every 5 minutes until dryness of the mouth occurs, preferably on the advice of a doctor or Poisons Information Centre. DO NOT attempt to give anything by mouth to a semi-conscious or unconscious person.
- Skin contact** Immediately remove contaminated clothing. Wash affected areas with soap and water. Seek **urgent** medical aid. Persons assisting the patient should protect themselves from contamination. Give one atropine tablet every 5 minutes until dryness of the mouth occurs, preferably on the advice of a doctor or Poisons Information Centre. DO NOT attempt to give anything by mouth to a semi-conscious or unconscious person.
- Eye contact** Rinse eyes immediately with clean water for at least 15 minutes and obtain **urgent** medical aid.
- Ingestion** Wash out mouth with water. Keep patient at rest and seek **urgent** medical advice as above. **Transport patient to doctor or hospital quickly.** Give one atropine tablet every 5 minutes until dryness of the mouth occurs, preferably on the advice of a doctor or Poisons Information Centre. DO NOT attempt to give anything by mouth to a semi-conscious or unconscious person.
- First Aid Facilities** Provide eyewash and safety shower facilities in the workplace. Obtain an emergency supply of atropine tablets 0.6 mg.
- Medical attention** Nitofol contains methamidophos which is an organophosphorus compound, and as such it is a cholinesterase inhibitor.  
Symptoms of poisoning  
Mild intoxication causes headache, blurred vision, weakness, sweating, mild chest pain, nausea and vomiting. Severe intoxication causes cyanosis (blueness of the skin, as from lack of oxygen), muscular twitching, spasms, miosis (pinpoint pupils) and respiratory paralysis. Onset of symptoms may be delayed. Cholinesterase inhibition sometimes persists for several weeks.  
Delayed neurological problems (delayed peripheral neuropathy) have been described 2-4 weeks after large exposures to organophosphates.  
Treatment  
Basic aid, decontamination, symptomatic treatment and if necessary administration of antidote. Antidote: Atropine sulphate. In severe cases pralidoxime may be administered as well, if given within 24 hours after exposure. Atropine should not be given to a cyanosed patient. Monitor respiratory, cardiac and central nervous system function. Monitor red blood cell and plasma cholinesterase levels. Administer oxygen if necessary. Watch for pulmonary oedema and delayed neurological symptoms.  
Contraindications  
Adrenergic derivatives. Never give patient morphine, theophylline or theophylline-ethylenediamine. Large amounts of intravenous fluids are generally contraindicated because of the threat of pulmonary oedema.
- Production workers and agricultural workers handling this product should be monitored for cholinesterase levels. A baseline level should be established prior to any potential exposure.

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## 5. FIRE FIGHTING MEASURES

<b>Extinguishing media</b>	Waterspray, foam, dry chemical, carbon dioxide, sand.
<b>Hazards from combustion products</b>	In a fire, hydrogen cyanide, carbon monoxide, phosphorus pentoxide, sulphur dioxide and nitrogen oxides may be formed.
<b>Precautions for fire fighters</b>	Fire fighters should wear full protective gear, including self-contained breathing apparatus (AS/NZS 1715/1716). Keep unnecessary people away and move all other personnel to windward side of fire. Isolate hazard area and deny entry. Consider evacuation, taking all relevant factors into account. In case of doubt, evacuate immediate vicinity and request emergency services assistance. Use water spray to cool fire-exposed containers. Bund area with sand or earth to prevent contamination of drains or waterways. Dispose of fire control water or other extinguishing agent and spillage safely later.
<b>Hazchem code</b>	2X

## 6. ACCIDENTAL RELEASE MEASURES

Avoid contact with the spilled material or contaminated surfaces. Do not smoke, eat or drink during the cleanup process. Personnel involved in cleanup should wear full body protective clothing and equipment as described in Section 8 - PERSONAL PROTECTION. Keep people and animals away and upwind. Consider evacuation and obtain assistance from emergency services if needed. Prevent spilled material from entering drains or watercourses. Contain spill and absorb with earth, sand, clay, or other absorbent material. Collect and store in properly labelled drums for safe disposal. Clean floor with a damp cloth and place cloth in drum. Seal and label drums for safe disposal. Thoroughly ventilate the area after cleanup. Deal with all spillages immediately. If contamination of drains, streams, watercourses, etc. is unavoidable, warn the local water authority. Decontaminate tools, equipment and clothing used in the cleanup. Dispose of any heavily soiled clothing, placing it in disposal drum.

## 7. HANDLING AND STORAGE

<b>Handling</b>	Keep out of reach of children. Very dangerous. Poisonous if absorbed by skin contact, inhaled or swallowed. Repeated minor exposures may have a cumulative poisoning effect. Will irritate the eyes and skin. Avoid contact with eyes, skin and clothing. Do not inhale vapour or spray mist. If clothing becomes contaminated with product or wet with spray remove it immediately. If product on skin, immediately wash area with soap and water. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use, take a shower or bath and wash gloves, goggles, respirator and contaminated clothing. Wash respirator with detergent and warm water.
<b>Storage</b>	Store in the closed, original container in a cool, well-ventilated area. Do not store for prolonged periods in direct sunlight. Store in a locked room or place away from children, animals, food, feedstuffs, seed and fertilisers.
<b>Flammability</b>	This product is a Class C1 Combustible liquid – flash point between 51° C and 150° C.

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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>Exposure standards</b>	There are no applicable NOHSC Exposure standards.
<b>Biological limit values</b>	Health surveillance is required in the workplace for organophosphorus pesticides such as methamidophos in this product. No biological limit values are assigned. The ACGIH Biological Exposure Index is 70% of individual's baseline for cholinesterase activity in red blood cells.
<b>Engineering controls</b>	Control process conditions to avoid contact. Use local exhaust ventilation during manufacture. Use this product in a well-ventilated area only.
<b>Personal Protective Equipment</b>	Product is very dangerous – poisonous if absorbed by skin contact, inhaled or swallowed. <ul style="list-style-type: none"><li>• Wear goggles or face shield</li><li>• Wear full face piece respirator with combined dust and gas cartridge - AS/NZS 1715/1716 approved. In enclosed spaces a respirator or hood with an independent air supply should be worn.</li><li>• Wear protective waterproof clothing and impervious footwear.</li><li>• Wear elbow-length PVC gloves.</li><li>• Keep work clothes separate. Remove soiled or soaked clothing immediately. Clean them separately, taking suitable precautions, or destroy if necessary.</li></ul>

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Slightly hazy straw coloured liquid
<b>Odour:</b>	Slight characteristic odour, like rotten eggs
<b>pH:</b>	Not available
<b>Vapour pressure:</b>	$2.3 \times 10^{-5}$ hPa at 20° C ( <i>methamidophos</i> )
<b>Vapour density:</b>	Not available
<b>Boiling point:</b>	188° C
<b>Freezing/melting point:</b>	Not available
<b>Solubility:</b>	Miscible with water
<b>Density:</b>	Approx. 1.22 g/mL at 20° C
<b>Flash Point:</b>	> 70° C
<b>Flammability (explosive) limits:</b>	Not available
<b>Auto-ignition temperature:</b>	Not available
<b>Partition coefficient (octanol/water):</b>	<i>Methamidophos</i> : Log $P_{ow}$ = - 0.80 at 20° C

## 10. STABILITY AND REACTIVITY

<b>Chemical stability</b>	Stable under normal conditions of use.
<b>Conditions to avoid</b>	Heat above 50° C.
<b>Incompatible materials</b>	Oxidising agents, alkaline materials. Methamidophos is slightly corrosive to mild steel and copper alloys.
<b>Hazardous decomposition products</b>	Mercaptans, disulphates, thioether. In a fire, hydrogen cyanide, carbon monoxide, phosphorus pentoxide, sulphur dioxide and nitrogen oxides may be formed.
<b>Hazardous reactions</b>	Dangerous reactions are possible with strong oxidising agents.

## 11. TOXICOLOGICAL INFORMATION

### POTENTIAL HEALTH EFFECTS

Methamidophos, the active ingredient in Nitofol Insecticide Spray, is an anticholinesterase compound. Symptoms typical of cholinesterase inhibition (for all routes of entry):

#### Mild cases

Headache, blurred vision, weakness, sweating, mild chest pain, nausea and vomiting.

#### Severe cases

Cyanosis (blueness of the skin, as from lack of oxygen), muscular twitching, spasms, miosis (pinpoint pupils) and respiratory paralysis. These symptoms commence from one to three hours after excessive exposure.

Delayed neurological problems (delayed peripheral neuropathy) have been described 2-4 weeks after large exposures to organophosphates.

<b>Inhalation</b>	Very poisonous by inhalation.
<b>Skin contact</b>	Very poisonous if absorbed by skin contact. May irritate the skin.
<b>Eye contact</b>	Will irritate the eyes.
<b>Ingestion</b>	Very poisonous if swallowed.

### ANIMAL TOXICITY DATA

#### Acute:

<b>Oral toxicity</b>	LD <sub>50</sub> male rat: 18 mg/kg ( <i>similar product</i> ) LD <sub>50</sub> female rat: 20 mg/kg ( <i>similar product</i> )
<b>Dermal toxicity</b>	LD <sub>50</sub> male rat: 192 mg/kg ( <i>similar product</i> ) LD <sub>50</sub> female rat: 49 mg/kg ( <i>similar product</i> )
<b>Inhalation toxicity</b>	LC <sub>50</sub> (4 h) rat: approx. 0.252 mg/L aerosol ( <i>similar product</i> )
<b>Skin irritation</b>	Non irritant (rabbit) ( <i>similar product</i> )

## 11. TOXICOLOGICAL INFORMATION - continued

**Irritation to mucous membranes** Non irritant (rabbit) (*similar product*)

**Sensitisation** Not a sensitiser in Buehler test (*methamidophos*)

### Chronic:

Repeated minor exposure may have a cumulative poisoning effect. The main health effects from repeated exposure would be toxic symptoms of cholinesterase inhibition as described above. Animal studies with methamidophos showed no evidence of oncogenic, carcinogenic or teratogenic potential. It may be weakly mutagenic.

## 12. ECOLOGICAL INFORMATION

Very toxic to aquatic organisms. Toxic to bees and birds.  
DO NOT contaminate streams, rivers or waterways with Nitofol or the used containers.

### **Ecotoxicity**

#### Methamidophos:

##### *Fish toxicity:*

LC<sub>50</sub>: 47.7 mg/L (96 h); golden orfe (*Leuciscus idus melanotis*)

LC<sub>50</sub>: 25 mg/L (96 h); trout (*Oncorhynchus mykiss*)

LC<sub>50</sub>: 34 mg/L (96 h); (*Lepomis macrochirus*)

##### *Aquatic invertebrate toxicity:*

EC<sub>50</sub>: 0.27 mg/L (48 h); *Daphnia magna*

##### *Algae toxicity:*

##### Growth rate:

IC<sub>50</sub>: > 178 mg/L (96 h); green algae (*Desmodesmus subspicatus*)

##### *Bacteria toxicity:*

EC<sub>50</sub>: > 10000 mg/L; activated sludge

##### *Bird toxicity:*

LD<sub>50</sub>: 10 mg/kg; bobwhite quail

### **Environmental fate, persistence and degradability, mobility**

#### *Aquatic, air or soil environmental hazards:*

Rapidly degraded in soil; field DT<sub>50</sub> approx. < 2 days. In water, DT<sub>50</sub> 5 to 27 days (pH 7); photolysis may contribute to degradation. Rapidly degraded in air, DT<sub>50</sub> 0.578 days.

## 13. DISPOSAL CONSIDERATIONS

Triple or preferably pressure rinse containers before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt. Dispose of waste product as hazardous waste via a licensed disposal contractor to an approved landfill. Do not discharge into drains or sewers.

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## 14. TRANSPORT INFORMATION

<b>UN number</b>	3018
<b>Proper shipping name</b>	ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC (contains methamidophos)
<b>Class and Class description</b>	6.1
<b>Subsidiary Risk</b>	No subsidiary risk
<b>Packing Group</b>	II
<b>EPG</b>	Guide 35 – Dangerous Goods - Initial Emergency Response Guide
<b>Hazchem code</b>	2X
<b>Marine Pollutant</b>	Yes (Methamidophos is a Marine Pollutant Class "P")

## 15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Act 1988  
Australian Pesticides and Veterinary Medicines Authority approval number: 33036

Training in the use of farm chemicals is recommended before handling this product.

See also Section 2.

## 16. OTHER INFORMATION

**Trademark information** Nitofol® is a Registered Trademark of Bayer.

**Preparation information** Replaces May 15, 2003 MSDS  
Reasons for revision: Formulation change, product codes, removed, 200 L size, First Aid, Disposal

**Abbreviations** ACGIH = American Conference of Governmental Industrial Hygienists

This MSDS summarises our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace. Each user should read this MSDS and consider the information in the context of how the product will be handled and used in the workplace including in conjunction with other products.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company.

Our responsibility for products sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available on request.

END OF MSDS